



Using Information Strategically to Protect Human Health and the Environment

Recommendations for Comprehensive Information Resources Management



Report of the IRM Strategic Planning Task Force

Environmental Information
and Assessment Committee

National Advisory Council for
Environmental Policy and Technology

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NOTE TO READER

The National Advisory Council for Environmental Policy and Technology (NACEPT) is a formally chartered Federal advisory committee that is charged with providing the Administrator of EPA with advice and recommendations on a broad range of environmental issues. NACEPT has several standing committees, and one of them -- the Environmental Information and Assessment (EIA) Committee -- examines issues associated with the gathering, dissemination, and use of environmentally related data and information. EPA asked the EIA Committee to form an Information Resources Management (IRM) Strategic Planning Task Force to provide recommendations on key elements that EPA should include in an IRM Strategic Plan for the Agency. This report provides a summary of the IRM capabilities and issues that the Task Force has identified and believes must be addressed by the Agency's leadership.

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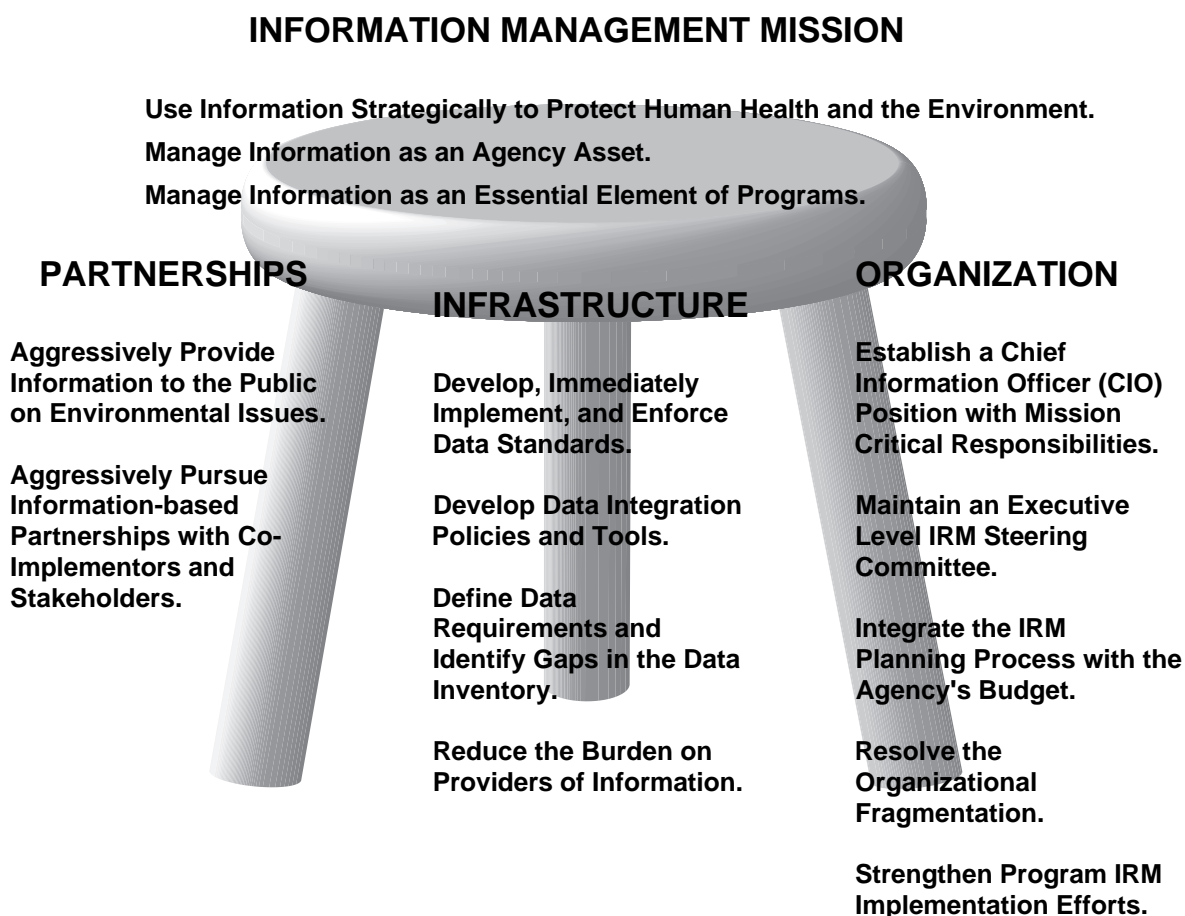
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EXECUTIVE SUMMARY

If EPA does not change its approach to managing information resources, the Agency will fail to implement its new guiding principles.

EPA's investments in information have mirrored the Agency's traditional focus on single-media programs--air, water, and waste--providing an Information Resources Management (IRM) infrastructure that supports program activities, but is so highly decentralized and narrowly focused that it cannot support the Agency's overall mission. As EPA's approach to protecting human health and the environment evolves from a media-based, command and control approach to a more comprehensive cross-media approach, the Agency's management of information resources must also evolve.

The Task Force makes four recommendations to refocus EPA's information investments. Just as three legs support a stool, the partnerships, infrastructure, and organization recommendations will support a revitalized information management mission for EPA. The specific recommendations in each area are outlined below:



Implementing the recommendations in these four areas will enable EPA to develop a comprehensive IRM program which embraces emerging legislative and executive directives.

INTRODUCTION

The management of EPA's information resources must be aligned to support the mission of the Agency. EPA is in the midst of a profound shift from a media-by-media approach to a more comprehensive approach to the mission of protecting human health and the environment. This new comprehensive approach includes the following guiding principles:

- Ecosystem Protection,
- Environmental Justice,
- Pollution Prevention,
- Strong Science and Data,
- Partnerships,
- Reinventing EPA Management, and
- Environmental Accountability.

Implementing these principles will fundamentally alter the Agency's piecemeal approach and require new thinking in many areas, including the management of its information resources. EPA has begun addressing the realignment of its IRM Program. To assist in this process, the Agency sought the views of external stakeholders.

On March 24, 1989, the *Exxon Valdez* struck Bligh Reef in Prince William Sound, Alaska. What followed was the largest oil spill in U.S. history: over ten million gallons of crude oil flooded one of the nation's most sensitive ecosystems.¹ EPA's IRM Program was not prepared to support the multi-media analyses needed to respond to this situation--it took EPA three months to compile and analyze the cross-media data the Agency needed. Five years later, the Agency still needs to establish an Agency-wide architecture for cross-media systems development.²

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As EPA realigns its own strategic directions, the Agency is also challenged by new legislative mandates and Executive Office directions. These include the Government Performance Results Act (GPRA), the National Performance Review (NPR), and the Pollution Prevention Act (PPA). The GPRA requires EPA to establish measurable goals and to report its success in achieving these goals.

¹ The Exxon Valdez Oil Spill: A Report to the President, May 1989, Samuel K. Skinner, Secretary, Department of Transportation; and William K. Reilly, Administrator, EPA.

² Computer Systems Integrity: EPA Must Fully Address Longstanding Information Resources Management Problems (E1NMF1-15-0032-2100641, September 1992).

The NPR recommendations for EPA reinforce the cross-media orientation and principles such as ecosystem protection, environmental justice, and pollution prevention. The PPA requires the Agency to evaluate gaps and duplication with respect to data collected under Federal environmental statutes (See Appendix A for an abbreviated list of relevant legislation and Executive Office directives). These and other requirements are moving EPA towards more comprehensive approaches to its mission.

The Agency's management of its information resources has followed the single-media approach to environmental protection. This has resulted in a lack of coordination and incompatibility among information systems making comprehensive analysis

To understand how EPA's IRM program should change to support the Agency's guiding principles and new challenges, the Task Force reviewed information from many sources. They received oral and written testimony (Appendix B contains a list of external contributors) from many external partners, stakeholders, Co-Implementors (State, Tribal, and local Governments) and environmental organizations. In addition, the Task Force reviewed specific IRM reports by internal EPA groups, the Inspector General (IG), and the Government Accounting Office (GAO) (Appendix C lists the key publications and reports reviewed by the Task Force). The members of the Task Force also drew upon their extensive experience in IRM and work with the EPA and other Federal agencies. The Task Force found that the Agency's management of its information resources has followed the Agency's single-media approach to environmental protection. This single-media approach has resulted in a lack of coordination and incompatibility among information systems which makes comprehensive analysis of environmental information difficult.

Ultimately, EPA's ability to fulfill its mission depends upon how it manages its resources, including information which is a key resource of the Agency. EPA historically has managed its information resources based on legislation that centers on single-media programs, such as the Clean Air Act for the Office of Air and Radiation and the Clean Water Act for the Office of Water. This heritage has resulted in a fragmented approach to managing the Agency's information. For example,

- Programs do not have sufficient data to measure their progress towards achieving their programmatic goals, and
- EPA has not identified and does not collect adequate data to measure environmental quality or trends in environmental quality.

This fragmented approach will not support the requirements of the GPRA, NPR, PPA, or the Agency's comprehensive approach to environmental protection. The Task Force concludes that EPA will fail to implement its guiding principles unless it moves to a more comprehensive approach to managing the Agency's information resources.

EPA will fail to implement its new guiding principles if the Agency does not change its approach to managing information

To meet this need, the Task Force makes the following four recommendations:

**INFORMATION
MANAGEMENT
MISSION**

**EPA Must Use Information Strategically
to Achieve the Agency's
Mission.**

PARTNERSHIPS

**EPA Must Actively Use Information To Empower
Partners.**

INFRASTRUCTURE

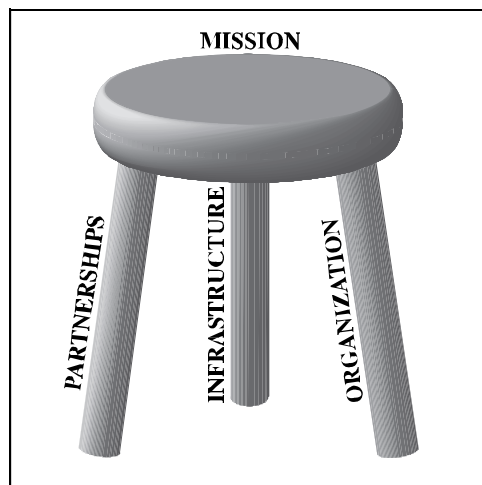
**EPA Must Establish an Integrated Information
Infrastructure to Support a Comprehensive
Approach to Environmental Protection.**

**ORGANIZATION EPA Must Establish a More Effective Organization for
Information Resources Management.**

A metaphor which captures the essential concept of interdependence underlying these recommendations is a three legged stool. Just as a three legged stool will collapse if any part is missing, failure to implement any one of these interdependent recommendations will collapse the whole.

These recommendations define cultural and organizational changes needed to successfully manage EPA's information resources. When these recommendations are fully implemented, IRM will have a solid foundation to support the Agency's mission. Failure to implement these recommendations will undermine the Agency's ability to meet its legislative mandates and its new strategic directions.

This Report explains the four recommendations and identifies actions EPA must take to successfully implement them. In the Task Force's opinion, full implementation of these recommendations will position the Agency to successfully leverage its investment in information to support EPA's mission to protect human health and the environment.



INFORMATION MANAGEMENT MISSION

EPA MUST USE INFORMATION STRATEGICALLY TO ACHIEVE THE AGENCY'S MISSION.

The Task Force found that the Agency has not managed its information resources strategically. First, most IRM investments were made to support program actions, such as recording and tracking actions and maintaining compliance records. Second, investments have followed EPA's single-media investment strategy and were not designed to support Agency-wide needs. In general, EPA's investments in information resources have not been used strategically as an environmental protection tool.

Information must be viewed and managed as a fundamental, corporate asset to move beyond the fragmented use of information resources. The Agency must realize that information provides the critical link to integrate programs, empower stakeholders to accurately identify, manage, and prevent environmental problems, and promote environmental successes.

Information is a vital tool for environmental protection and not a private or single program commodity. To gain the maximum benefit from EPA's IRM investment, there must be a change in the Agency's culture that causes organizations and individuals to view information as a resource to be shared and used strategically.



TO ACCOMPLISH THIS, EPA MUST:

Information: Strategic Use

Use Information Strategically to Protect Human Health and the Environment.

EPA must use information strategically, rather than merely treating information as a byproduct of program efforts or as a program tracking mechanism. Key opportunities to use information as a strategic tool include:

- providing people with sound information to better understand and evaluate environmental risks and to identify solutions to environmental problems;
- using information to establish environmental priorities, identify goals and environmental indicators, allocate resources, and measure environmental results;
- employing information-based approaches to protect the environment along with the traditional command and control approach;
- using information resources to identify risks and target information collection investments to the greatest risk reduction opportunities; and
- using information to educate and enlist business, government, and the public, especially the residents of affected communities, to improve environmental management through efforts such as pollution prevention.

EPA has many opportunities to protect human health and the environment through the strategic use of information. EPA has already begun significant work in this area. The Toxic Release Inventory (TRI) and the development of environmental statistics are two examples. EPA's effectiveness and the nation's well-being will be greatly enhanced by EPA's full adoption of this new method of using information.

Information: an

***Manage
Information as
an Agency Asset.***

To meet the information requirements of strategies such as ecosystem protection and pollution prevention, EPA must be able to use its information across traditional program boundaries. Today, the data in EPA's information systems will not support cross-media use. For example, EPA's information does not allow EPA to combine data on ecosystems, industrial sectors, chemicals, and facilities across programs. Thus Agency and State efforts in ecosystem protection, multi-media targeted enforcement, and pollution prevention are severely hampered.

Agency managers must ensure that EPA's information is of recognized value, can be combined easily, and is supported by analytical tools. The management of information resources must support Agency-wide information needs along with program needs. EPA's management culture must change to meet these needs. EPA must manage information as an Agency asset to support comprehensive environmental protection.

**Information:
an Essential**

***Manage
Information as an
Essential Element
of Programs.***

Information management issues are often overlooked in the development of program plans, resulting in information resource management efforts that are under-budgeted, under-managed, behind schedule, and a source of frustration to both program managers and secondary users. Management of information resources must be understood as essential to all phases of program development. For example, adequate attention to information management issues during regulation development can avert inefficient and narrowly focused data collection efforts and system development. Managers must consistently address information resource issues in all phases of program management.

PARTNERSHIPS

EPA MUST ACTIVELY USE INFORMATION TO EMPOWER PARTNERS.

Information is a powerful asset. It is one asset that all partners can share without depleting the asset. Information also gains in value as it is used. These attributes make information a critical asset in partnership building.

The establishment of information-based partnerships is one key way information can be used strategically to protect human health and the environment. Environmental issues can be better defined and more effectively addressed through partnerships with:

- local, state, tribal, and foreign governments;
- other Federal agencies;
- educational, environmental, and community-based organizations;
- industries; and
- individuals.

EPA must demonstrate a clear commitment to information-based partnerships through policies promoting dissemination and easy access to the Agency's information. Empowering the public and establishing information-based partnerships can pay great dividends in efforts to improve the environment.



TO ACCOMPLISH THIS EPA MUST:

Empower

Aggressively Provide Information to the Public on Environmental Issues.

EPA must actively disseminate and provide access to information to enable people to be partners in EPA's emerging comprehensive approach to environmental protection, including environmental justice, pollution prevention, and ecosystem protection. An informed public is better able to recognize and protect itself from environmental risks and ensure that environmental issues are addressed equitably. EPA can accomplish these objectives by:

- providing easy access to standardized and

integrated environmental information;

- disseminating information to enable the public to be full environmental partners; and
- developing diverse information dissemination methods such as hotlines, public libraries, Internet, facilitated searches, bulletin boards, on-line access, and broadcast services.

As EPA provides information to empower the public, it must also ensure that the origin, limitations, intended use, and source of the information is disclosed and available to all partners. EPA must also protect confidential business and personal information.

Information-based Partnerships***Aggressively Pursue Information-based Partnerships with Co-Implementors and Stakeholders.***

Since much of EPA's data comes from states, localities, businesses, and other stakeholders, EPA must incorporate these members as partners in EPA's approaches for achieving environmental improvement. Additionally, EPA provides national environmental leadership while state and local governments are responsible for implementing many of the national environmental programs. Therefore, EPA must establish a forum in which its partners can share information on IRM-related issues. EPA must define strategies to effectively involve environmental stakeholders in synergistic relationships with EPA as providers and consumers of information, including:

- providing opportunities for Co-Implementors to contribute to IRM planning;
- minimizing the burden on data providers by coordinating information collection among all environmental and related laws;
- protecting confidential business and personal information;
- establishing a permanent IRM advisory committee representing each of EPA's stakeholders, including industry, local government, environmental groups, community groups, States, and other Federal agencies;
- establishing partnerships to share best practices in IRM management including solutions, successes, and failures;

- enabling partnerships that identify and share information about best environmental management and technological practices;
- participating in intergovernmental activities to share data and develop standards; and
- supporting an effective Environmental Indicators Program at the local, state, and national levels.

EPA's success in positioning IRM to support the Agency is heavily reliant upon its partners. By aggressively pursuing information-based partnerships, EPA will greatly enhance its potential for success.

INFRASTRUCTURE

EPA MUST ESTABLISH AN INTEGRATED INFORMATION INFRASTRUCTURE TO SUPPORT A COMPREHENSIVE APPROACH TO ENVIRONMENTAL PROTECTION.

EPA's ability to effectively collect, manage, analyze, and disseminate integrated information is fundamental to a comprehensive approach to environmental protection. Although EPA has begun to implement environmental initiatives in a manner that links and refocuses its traditional single-media programs, the Agency's investment in and use of its information infrastructure does not yet reflect or support this change. Instead, the existing infrastructure mirrors the Agency's traditional single-media approach. The infrastructure comprises a series of "stovepipe" information systems and databases that were designed solely to support specific media programs and not to exchange or link information across programs. This fragmented IRM infrastructure will not support a comprehensive approach to the Agency's mission. An integrated information infrastructure with standardized, accurate information that spans the Agency's organizations and its partners is critical to implementation of EPA's guiding principles.



TO ACCOMPLISH THIS, EPA MUST:

Data Standards

Develop, Immediately Implement, and Enforce Data Standards.

Data standardization is a fundamental part of EPA's integrated information infrastructure. The first step toward standardizing data is to identify those common data elements (termed key data identifiers), widely used throughout the Agency and by State Co-Implementors, which provide the framework to link and combine information. Key data identifiers will facilitate a comprehensive environmental approach by allowing EPA and its partners to combine and exchange information from many sources. The first step to implementing data standards is standardizing key data identifiers. To do this, EPA should:

- develop and fully implement consistent, uniform identifiers for:
 - Facilities/Sites (a Facility ID),
 - Spatial coordinates (latitude and longitude),
 - Regulated Substances,
 - Industrial Sectors (Standard Industrial Codes, (SIC)),
 - Chemicals (CAS name and number), and
 - Organizations (Dun and Bradstreet);
- define additional key identifiers (e.g., governmental organizations, ecosystems, rivers, and regions) that should be standardized and implemented; and
- develop incentive and enforcement mechanisms (e.g., linking IRM funding decisions to implementation of standards).

Standardization of all data should be considered. However, EPA should only develop its own standards when existing international or Federal standards are insufficient.

Data

***Develop Data
Integration Policies
and Tools.***

The ability to integrate data will make it possible for EPA and its partners to use information to support a comprehensive environmental approach that spans traditional single-media programs. EPA's new approaches will require the design and use of systems and tools to readily access, combine, and analyze data from multiple systems. Data integration policies and tools should include:

- using key identifiers to integrate and share environmental data across diverse data collections;
- designing and developing applications that will enable data to be linked across programs and media using key identifiers;
- providing secondary data users (users outside of the program office responsible for the system which maintains the data) with common methods to easily access EPA data; and
- undertaking and enhancing integrated system initiatives that will allow the Agency to measure its progress toward achieving its goals.

New technologies, such as Geographic Information Systems, and applications, such as Gateway, that integrate data will enhance secondary users' ability to use EPA data. Data

use will increase data accuracy as users identify and correct errors. This will improve EPA's science and data. The Agency should establish "feedback" loops to facilitate the correction of errors.

**Data
Inventory**

***Define Data
Requirements and
Identify Gaps in the
Data Inventory.***

A comprehensive data inventory and requirements analysis will determine what data the Agency has and needs to meet its mission. Most previous data collection requirements have concentrated on fulfilling "stovepipe" single medium legislative mandates. As a result, the Agency's data collections have similar or duplicative data, do not meet Agency information requirements, and lack basic environmental information needed to meet new challenges. A thorough data inventory and requirements analysis will allow the Agency to focus its data collection efforts toward measuring the success of its programs. The key steps to constructing EPA's data inventory include:

- working with partners to identify data requirements to meet Agency and Co-Implementor needs;
- conducting an inventory of Agency data to identify its uses, limitations, and gaps;
- identifying data that should no longer be collected;
- working with partners to identify data sources or new information needed; and
- developing indexes and catalogs to facilitate access to data.

Through the recommended processes, EPA will ensure that data essential to help solve environmental problems are collected and available to the Agency's environmental decision makers and partners. This effort will also fulfill the data analysis requirements of the Pollution Prevention Act and empower EPA and its Co-Implementors' comprehensive approaches.

Reduce

***Reduce the Burden
on Providers of
Information.***

EPA faces increasing resistance to new data collection requirements. Many data providers feel that data and collection efforts are not being used to maximum benefit. If EPA is to fill its information gaps, it must demonstrate the importance of the data requirements and assure reporters that EPA is making good faith efforts to eliminate unnecessary burdens on reporters. EPA should ease the burden on information providers by:

- creating effective reporting mechanisms through data integration to eliminate existing cumbersome or duplicative reporting requirements;
- using electronic methods where appropriate to exchange data with providers in order to improve accuracy and reduce cost;
- demonstrating that the data being collected is useful and is required for environmental effectiveness; and
- using innovative technologies to convert paper reports from small entities for which electronic reporting may not be cost effective.

Once EPA has completed its data inventory and defined its data requirements and standards, the Agency will have the ability to consolidate many of its data collection requirements.

Consolidated reporting requirements together with alternative electronic methods for collecting information will greatly reduce the financial burden on information providers. Data collection methods that are coordinated and cost-effective for the data generators will promote data accuracy and improve partnerships.

EPA MUST ESTABLISH A MORE EFFECTIVE ORGANIZATION FOR INFORMATION RESOURCES MANAGEMENT.

The Task Force finds that EPA's existing information resources management structure is fragmented and does not provide sufficient authority to its senior IRM official to ensure that Agency information needs are met (See EPA Organization Chart, Appendix D). In EPA's decentralized environment, senior program managers have not traditionally accepted responsibility for leading IRM programs in their area.

An appropriate organizational structure must be created with authority and responsibility clearly aligned to manage the Agency's information resources. The management of EPA's information resources must be championed at a senior level and receive adequate attention from all senior managers. There must be a distinct budget for all IRM expenditures to ensure that information resource costs are accounted for like other corporate assets. Therefore, EPA must change the general culture of its IRM management.

ORGANIZATION



TO ACCOMPLISH THIS EPA MUST:

CIO

Establish a Chief Information Officer (CIO) Position with Mission Critical Responsibilities.

To provide a focal point for IRM, the Agency must establish a CIO. The individual filling the position should report to the Agency's Administrator and be a Senate-confirmed, political appointee to ensure equal standing with the other senior managers of the Agency. The CIO's responsibilities must include:

- responsibility and authority for Agency-wide IRM planning and budgeting;
- establishment of an organizational structure that cohesively manages information resources at all levels;
- definition and institutionalization of IRM principles;

- implementation of Agency-wide IRM initiatives and an integrated information infrastructure; and
- compliance with Federal IRM regulations and circulars, including specifically managing information to support the performance measures required under the Government Performance Results Act (GPRA), reviewing information collection requirements under the Paperwork Reduction Act (PRA) and the Pollution Prevention Act (PPA), and ensuring information is managed as an Agency-wide asset.

Experience has shown that isolated and stand-alone senior information officials often are viewed by senior managers as not being integral to accomplishing an organization's mission. Stand alone CIOs are usually viewed by other senior managers as having support

roles, not mission critical roles. To overcome this, the Agency's CIO must also have responsibilities which clearly link the CIO to critical elements in the Agency's mission (e.g. finance, environmental indicators, or environmental statistics).

IRM Steering

Maintain an Executive Level IRM Steering Committee.

EPA must continue its effort to build an executive level IRM Steering Committee³ to oversee, sponsor, and review the IRM program. A Steering Committee comprised of executive level members ensures senior management involvement and commitment to IRM. Senior Executives have the authority to commit their program to Steering Committee decisions while other levels of staff cannot. The responsibilities of the committee should include the following activities:

- recommending principles, standards, and policies for managing EPA's information resources;
- reviewing all Agency and Program IRM Strategic and multi-year implementation plans; and
- reviewing the Agency's IRM budget.

EPA should maintain broad representation from State Co-Implementors on the committee and permit as full participation as possible without invoking the Federal Advisory Committee Act (FACA) requirements.

IRM Planning

Integrate the IRM Planning Process with the Agency's Budget.

EPA is required by federal law to account for IRM activities in annual and multi-year plans. The Agency is also required to link these IRM plans to its budget. EPA has begun to make progress in this area, but must continue to improve. In order to have an IRM program that will effectively support the Agency's mission and comply with Federal requirements, EPA must:

- link the Agency's IRM planning and budgeting processes so that all IRM goals are explicitly stated and funded;
- fund only IRM projects that have been approved and are consistent with standards;
- establish budget line items for critical IRM initiatives (e.g., key data identifiers);
- identify Federally mandated data collection costs;
- develop appropriate cost allocation mechanisms to ensure that funding is available to support Agency-wide IRM activities and infrastructure; and
- assign primary responsibility to the CFO and CIO for ensuring that these recommendations are accomplished.

³ As specified in the Executive Steering Committee for IRM charter, dated March 7, 1994, the membership should include the Deputy Chief of Staff; Assistant, Associate, and Regional Administrators; the General Counsel; the Inspector General; and 5 State representatives.

Linking IRM planning to the Agency's budget promotes visibility and accountability for IRM initiatives. Furthermore, establishing this link ensures that the importance of IRM to program initiatives is not lost during budget considerations.

Organization

***Resolve the
Organizational
Fragmentation.***

The Task Force, in reviewing EPA's organizational chart, identified both functional overlaps and functional fragmentation for IRM policy and delivery of IRM services. For example, the Office of Policy, Planning, and Evaluation (OPPE), the Office of Information Resources Management (OIRM), and the National Data Processing Division (NDPD) all have IRM policy functions and service delivery roles. However, each reports through different managers. This overlap reduces the effectiveness of IRM's support of the Agency. Various audit reports⁴ document the fragmentation and conclude it has led to ineffective management of EPA's IRM program. The Task Force believes that the Administrator should review the situation and consider the following options:

- consolidating IRM functions with less overlap and greater delineation,
- consolidating IRM organizations, or
- strengthening the CIO's authority to enforce IRM delegations.

The Task Force is not in a position to suggest a specific IRM organization for the Agency, but it recommends that this issue be carefully reviewed. An IRM program that supports Agency work must have coherent structure with clear accountability.

Program

***Strengthen Program
IRM Implementation
Efforts.***

EPA has found that program level implementation efforts improve support for primary users. Recognizing this, EPA should continue to empower program implementation efforts. Program specific initiatives must, however, be consistent with the overall Agency IRM strategy and support the integrated information infrastructure. Program commitment to tactical IRM plans and line items in program budgets that support IRM are essential to an effective IRM strategy at the program level. The CIO and executive level Steering Committee must clearly articulate the Agency's vision to these internal partners and assist them in translating the Agency's mission into IRM initiatives that are consistent with the Agency's strategic plans.

⁴ Environmental Protection: EPA's Plans to Improve Longstanding Information Resources Management Problems (GAO/AIMD-93-8, September 1993);

Computer Systems Integrity: EPA Must Fully Address Longstanding Information Resources Management Problems (E1NMF1-15-0032-2100641, September 1992);

Special Review of EPA's Information Systems Program, Volume 1 (E1SKG3-15-0098-4400038, March 1994).

RELATED INITIATIVES

Before finalizing its recommendations, the Task Force reviewed and discussed many of the ongoing IRM improvement efforts in the Federal Government and at the EPA. The Task Force recommendations complement these initiatives as they relate to information management. These are:

- strengthening State Capacity;⁵
- developing a national information infrastructure;⁶
- making data available to the public, through compliance with the Government Information Locator System (GILS);⁷
- using data standards, particularly existing federally mandated standards;⁸
- improving the management of EPA's information resources as recommended by the GAO and the IG;⁹ and
- working with the Federal Geographic Data Committee to establish identifiers that are not unique to EPA.¹⁰

Additionally, several recent Executive Orders call for changes in Federal-stakeholder relationships, including better partnerships and information sharing.

⁵ State Capacity Task Force, Report of the Task Force to Enhance State Capacity, Strengthening Environmental Management in the United States (EPA-270-R-93-001, July 1993).

⁶ *Coordinating Geographic Data Acquisitions and Access: The National Spatial Data Infrastructure*, Executive Order 12906, April 11, 1994.

⁷ Draft OMB Bulletin 94-XX, Establishment of Government Information Locator Service, May 13, 1994.

⁸ Federal Information Processing Standards Publications (FIPS PUBS), issued under the provisions of the Federal Property and Administrative Services Act of 1949 as amended by the Computer Security Act of 1987, Public Law 100-235.

⁹ Environmental Protection: EPA's Plans to Improve Longstanding Information Resources Management Problems (GAO/AIMD-93-8, September 1993);

EPA Toxic Substances Program: Long-standing Information Planning Problems Must Be Addressed (GAO/AIMD-94-25, November 1993);

Executive Guide: Improving Mission Performance Through Strategic Information Management and Technology (GAO/AIMD-94-115, May 1994);

Computer Systems Integrity: EPA Must Fully Address Longstanding Information Resources Management Problems (E1NMF1-15-0032-2100641, September 1992);

Special Review of EPA's Information Systems Program, Volume 1 (E1SKG3-15-0098-4400038, March 1994).

¹⁰ OMB Circular A-16 tasks the Federal Geographic Data Committee (FGDC) with developing standards for NSDI and coordinating spatial data issues for those Federal agencies that have data that will be contributed to the NSDI.

CONCLUSION

The future success of EPA and its Co-Implementors' efforts to protect the environment is contingent upon the ability to harness the power of information. Because information is one of the keys to successfully achieving the shared goal of protecting the environment, EPA must lead a comprehensive information strategy that promotes a new attitude toward the critical nature of information. The power of information must be augmented through:

- strategic use of information,
- information partnerships,
- a truly integrated information infrastructure, and
- an effective information management organizational structure.

The Task Force believes that because its recommendations are so tightly woven, the Agency must fully embrace all four to successfully implement its guiding principles. Through full implementation of these recommendations, information will play its strategic role in supporting the mission to protect human health and the environment.



APPENDIX A

ABBREVIATED LIST OF RELEVANT LEGISLATION AND EXECUTIVE OFFICE DIRECTIVES

Chesapeake Bay Agreement

(related law: Clean Water Act Amendment of 1977) Section 103 of the Water Quality Act of 1987 added Section 117 to Title I of the Federal Water Pollution Act.

Clean Air Act

Public Law 91-604, as amended; 42 U.S. Code 1857-18571.

Clean Air Act Amendments of 1990

Public Law 101-549, 104 Statute 2399.

Clean Water Act Amendments of 1977

Public Law 95-217, 33 U. S. Code 1251.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)

Public Law 96-510, 94 Statute 2767, 42 U. S. Code 9601 et. seq., December 11, 1980.

Coordinating Geographic Data Acquisitions and Access: The National Spatial Data Infrastructure

Executive Order 12906, April 11, 1994.

Emergency Planning and Community Right to Know Act of 1986 (EPCRA)

Public Law 99-499. Also referred to as Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA).

Energy Policy and Conservation Act

Public Law 94-163, 89 Statute 871, December 22, 1975.

Establishment of Government Information Locator Service

Draft OMB Bulletin 94-XX, May 13, 1994.

Federal Insecticide, Fungicide, Rodenticide Act Amendments of 1988 (FIFRA)

Public Law 100-532, 102 Statute 2654, October 25, 1988.

Federal Water Pollution Control Act of 1972

Public Law 92-500, 86 Statute 816, 33 U.S. Code 1251 et seq., October 18, 1972. This is most commonly referenced "Federal Water Pollution Act" and "Clean Water Act."

Government Performance and Results Act of 1993

Public Law 103-62, 107 Statute 285, August 3, 1993.

Hazardous and Solid Waste Amendments Act of 1984

Public Law 98-3221, 98 Statute 3221, November 8, 1984.

Lead Contamination Control Act (related law: Safe Drinking Water Act)

Public Law 100-572, 102 Statute 2884, 42 U.S. Code 300, 1988.

Marine Protection Research and Sanctuaries Act of 1972

Public Law 92-532, 86 Statute 1052, October 23, 1972.

Motor Vehicle Information and Cost Savings Act

Public Law 94-364, 90 Statute 981.

National Performance Review: Enhancing the Intergovernmental Partnership

Executive Order 12875, November 26, 1993.

APPENDIX A

ABBREVIATED LIST OF RELEVANT LEGISLATION AND EXECUTIVE OFFICE DIRECTIVES

Paperwork Reduction Act

Public Law 96-511, December 1980.

Pollution Prevention Act of 1990

Public Law 101-508, 104 Statute 1388-321, 42 U.S. Code 13101, November 5, 1990.

Resource Conservation and Recovery Act of 1976

Public Law 94-580, 90 Statute 2795, 42 U.S. Code 6901 et. seq., October 21, 1976.

Safe Drinking Water Act

Public Law 93-523, 88 Statute 1660, 42 U.S. Code 300, December 16, 1974.

Safe Drinking Water Act Amendments of 1986

Public Law 99-339, 100 Statute 642, 42 U.S. Code 201, June 20, 1986.

Solid Waste Disposal Act Amendments of 1978

Public Law 95-609, 92 Statute 3079.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Public Law 99-499, 100 Statute 1613, October 17, 1986.

Toxic Substances Control Act

Public Law 94-469, 90 Statute 2003, October 11, 1976.

APPENDIX B

EXTERNAL CONTRIBUTORS

The following individuals provided written and oral comments to the Task Force.

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John Lutz, *Association of American Railroads*

Ellen Shapiro, *American Automobile Manufacturers Association*

Thomas Yuill, *Institute for Environmental Studies, University of Wisconsin-Madison*

APPENDIX C

KEY PUBLICATIONS AND REPORTS

The following are key publications and reports used by the Committee in the development of this report.

PUBLICATIONS

Davenport, Thomas H.; Hammer, Michael; and Metsisto, Tauno J. "How Executives Can Shape Their Company's Information Systems." *Harvard Business Review*, no. 89206, March-April 1989, pp. 130-134.

Exley, Charles. "How Changes in MIS Affect the CFO and CIO." *Financial Executive* 6, November-December 1990, pp. 16-20.

Minahan, Tim. "GAO Cites Need for Information Czar to Beef Up IT Project Management." *Government Computer News* 13, no. 3, 7 February, 1994, p. 8.

Rifkin, Glen. "Ciao for CIO's?" *Forbes ASAP*, October 23, 1993, pp. 93-101.

Simon, John, ed. "Managing Information Technology: Organization and Leadership." Harvard Business School, Case 9-189-133 (1989).

Tosta, Nancy. "National Spatial Data Infrastructure: Where Are We Now?" *Geo Info Systems*, January 1994, pp. 25-28.

"The Role of the CIO: A Status Report." *Information Strategy: The Executive's Journal*, Winter 1994, pp. 48-51.

"Tracking Toxics for Pollution Prevention." *Working Notes on Community Right to Know*, November-December 1991.

REPORTS

Alaska Department of Environmental Conservation, Division of Environmental Quality, Cooperative Environmental Community Agreement 1994 Program Report.

Executive Guide: Improving Mission Performance Through Strategic Information Management and Technology (GAO/AIMD-94-115, May 1994).

Information Management: Need for a Chief Information Officer for the General Services Administration (GAO/T-AIMD-94-98, March 1994).

Special Review of EPA's Information Systems Program, Volume 1 (E1SKG3-15-0098-4400038 March 1994).

State of New Hampshire, Information Architecture Principles, February 1994.

U.S. Environmental Protection Agency SIRM Focus Group, "Draft Elements of the IRM Vision," February 1994.

Improving Government: Actions Needed to Sustain and Enhance Management Reforms (GAO/T-OCG-94-1, January 1994).

U.S. Environmental Protection Agency, EPA Strategic Plan, Fiscal Years 1995-1999 (Draft), Chapter 1, "A New Generation of Environmental Protection," January 1994.

EPA Toxic Substances Program: Long-Standing Information Planning Problems Must Be Addressed (GAO/AIMD-94-25, November 1993).

Environmental Protection: EPA's Plans to Improve Longstanding Information Resources Management Problems (GAO/AIMD-93-8, September 1993).

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KEY PUBLICATIONS AND REPORTS

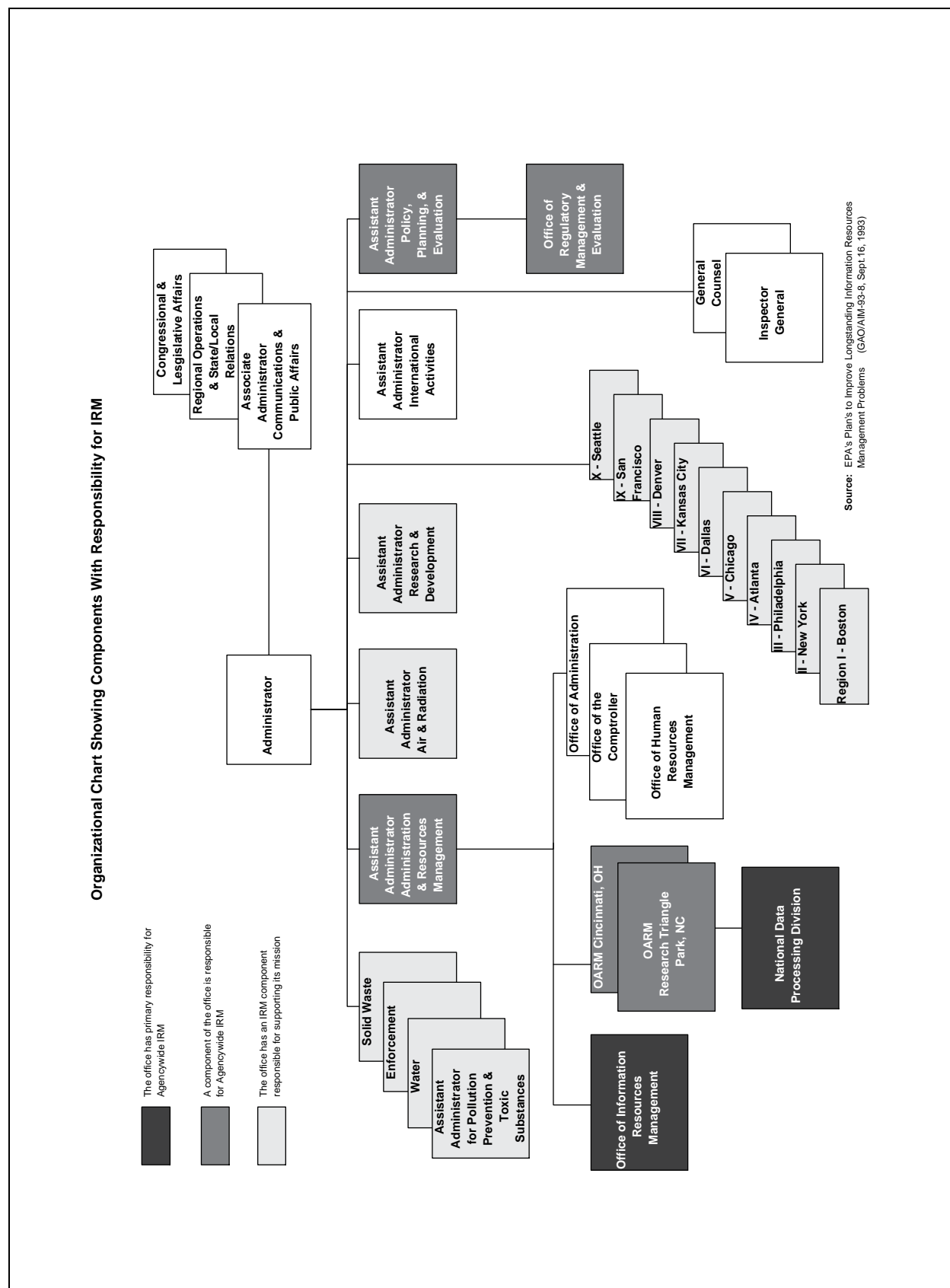
State Capacity Task Force, Report of the Task Force to Enhance State Capacity: Strengthening Environmental Management in the United States (EPA-270-R-93-001, July 1993).

Computer Systems Integrity: EPA Must Fully Address Longstanding Information Resources Management Problems (E1NMF1-15-0032-2100641, September 1992).

Regional GIS Workgroup, Regional GIS Strategic Plan, March 1992.

APPENDIX D

EPA IRM ORGANIZATION CHART



APPENDIX D

EPA IRM ORGANIZATION CHART
